

## CLAIMS

What is claimed is:

1. A state machine for an assembler capable of processing structured assembly language, said state machine comprising:

an IF state, an ELSE state, an END\_IF state, an ELSE\_IF state, and a SETUP\_IF state;

means for transitioning from said IF state or said ELSE\_IF state to said SETUP\_IF state, in response to recognizing a SETUP\_IF clause; and

means for transitioning from said SETUP\_IF state to said ELSE\_IF state, in response to recognizing an ELSE\_IF clause.

1        2.        The state machine of Claim 1, wherein said state machine further includes a means  
2        for transitioning from said IF state to said ELSE state, in response to recognizing an ELSE  
3        clause.

1        3.        The state machine of Claim 1, wherein said state machine further includes a means  
2        for transitioning from said IF state to said END\_IF state, in response to recognizing an  
3        END\_IF statement.

1        4.        The state machine of Claim 1, wherein said state machine further includes a means  
2        for transitioning from said IF state to said ELSE\_IF state, in response to recognizing an  
3        ELSE\_IF clause.

1        5.        The state machine of Claim 1, wherein said state machine further includes a means  
2        for transitioning from said ELSE state to said END\_IF state, in response to recognizing an  
3        END\_IF statement.

1        6.        The state machine of Claim 1, wherein said state machine further includes a means  
2        for transitioning from said ELSE\_IF state to said END\_IF state, in response to recognizing  
3        an END\_IF statement.

1        7.        The state machine of Claim 1, wherein said state machine further includes a means  
2        for transitioning from said ELSE\_IF state to said ELSE state, in response to recognizing  
3        an ELSE clause.

1 8. A computer program product residing on a computer usable medium for processing  
2 structured assembly language, said computer program product comprising:

3 program code means for implementing a state machine having an IF state,  
4 an ELSE state, an END\_IF state, an ELSE\_IF state, and a SETUP\_IF state;

5 program code means for transitioning from said IF state or said ELSE\_IF  
6 state to said SETUP\_IF state, in response to recognizing a SETUP\_IF clause; and

program code means for transitioning from said SETUP\_IF state to said  
ELSE\_IF state, in response to recognizing an ELSE\_IF clause.

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1 9. The computer program product of Claim 8, wherein said computer program product  
2 further includes program code means for transitioning from said IF state to said ELSE state,  
3 in response to recognizing an ELSE clause.

1 10. The computer program product of Claim 8, wherein said computer program product  
2 further includes program code means for transitioning from said IF state to said END\_IF  
3 state, in response to recognizing an END\_IF statement.

1 11. The computer program product of Claim 8, wherein said computer program product  
2 further includes program code means for transitioning from said IF state to said ELSE\_IF  
3 state, in response to recognizing an ELSE\_IF clause.

1 12. The computer program product of Claim 8, wherein said computer program product  
2 further includes program code means for transitioning from said ELSE state to said  
3 END\_IF state, in response to recognizing an END\_IF statement.

1 13. The computer program product of Claim 8, wherein said computer program product  
2 further includes program code means for transitioning from said ELSE\_IF state to said  
3 END\_IF state, in response to recognizing an END\_IF statement.

1 14. The computer program product of Claim 8, wherein said computer program product  
2 further includes program code means for transitioning from said ELSE\_IF state to said  
3 ELSE state, in response to recognizing an ELSE clause.

1 15. A data processing system having an assembler for processing structured assembly  
2 language, said data processing system comprising:

3 a state machine having an IF state, an ELSE state, an END\_IF state, an  
4 ELSE\_IF state, and a SETUP\_IF state;

5 means for transitioning from said IF state or said ELSE\_IF state to said  
6 SETUP\_IF state, in response to recognizing a SETUP\_IF clause; and

means for transitioning from said SETUP\_IF state to said ELSE\_IF state,  
in response to recognizing an ELSE\_IF clause.

1 16. The data processing system of Claim 15, wherein said data processing system  
2 further includes means for transitioning from said IF state to said ELSE state, in response  
3 to recognizing an ELSE clause.

1 17. The data processing system of Claim 15, wherein said data processing system  
2 further includes means for transitioning from said IF state to said END\_IF state, in response  
3 to recognizing an END\_IF statement.

1 18. The data processing system of Claim 15, wherein said data processing system  
2 further includes means for transitioning from said IF state to said ELSE\_IF state, in  
3 response to recognizing an ELSE\_IF clause.

1 19. The data processing system of Claim 15, wherein said data processing system  
2 further includes means for transitioning from said ELSE state to said END\_IF state, in  
3 response to recognizing an END\_IF statement.

1 20. The data processing system of Claim 15, wherein said data processing system  
2 further includes means for transitioning from said ELSE\_IF state to said END\_IF state, in  
3 response to recognizing an END\_IF statement.

1 21. The data processing system of Claim 15, wherein said data processing system  
2 further includes means for transitioning from said ELSE\_IF state to said ELSE state, in  
3 response to recognizing an ELSE clause.

1        22.    A data processing system comprising:

2                    means for identifying a SETUP\_IF clause;

3                    means for associating said identified SETUP\_IF clause with an ELSE\_IF  
4                    clause having a test condition; and

5                    means for inserting instructions from said identified SETUP\_IF clause prior  
to the test condition of said ELSE\_IF clause where said ELSE\_IF clause logically  
follows a prior IF clause or a prior ELSE\_IF clause.

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